

REMARKS

Claims 1-20 are in this application and are presented for consideration. By this Amendment, Applicant has amended claims 1-10. Applicant has also added new claims 11-20.

Claims 1-4 and 6-10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt (DE 10043989) in view of Kubo et al. (JP 10249916).

The present invention relates to an apparatus and a method comprising a roller or cylinder having a hardened outer surface that is supported by an elastic surface. The roller with the hardened outer surface compresses paper webs against an impression roller to form a continuously joined paper web. Applicant has discovered that using a roller with a hardened outer surface supported by an elastic surface produces a paper web free of undesired surface deformations. This advantageously provides a continuously joined paper web that is of better quality than paper webs produced by conventional techniques.

These features and paper web quality advantages are neither taught nor suggested by the prior art as a whole, including Eisenschmidt and Kubo et al. The references as a whole fail to suggest the combination of features claimed. The prior art as a whole fails to teach the novel combination of a roller having a hard outer surface supported by an elastic surface. This advantageously produces a continuous paper web that is free of noticeable roughness and other undesired surface deformations of the coupled paper webs.

Eisenschmidt is concerned with a pair of rollers 1, 2. Each roller has an engraving 3, 6 on the surface of the roller that projects beyond the roller surface. The rollers are aligned with each other such that the embossing gap forming a place for the common embossing of

tissue articles 9 is formed by an aligned radial external engraving sector of the rolls. However, Eisenschmidt fails to teach and fails to suggest the combination of a roller having a hard outer surface supported by an elastic surface. Eisenschmidt merely discloses two engraving rollers 1, 2 that are spaced apart from one another to form an embossing gap. In contrast to Eisenschmidt, the roller of the present invention has a hard outer surface that is located opposite an elastic surface. Applicant has discovered that the elastic surface advantageously dampens any vibration created when the roller compresses the paper webs against the impression roller. Applicant has also unexpectedly found that providing a hard outer surface on the roller prevents deformation of the roller when the roller compresses the paper webs against the impression roller. This advantageously prevents the roller from inadvertently producing undesired alterations to the paper web. Eisenschmidt fails to disclose such advantages since the reference only directs a person of ordinary skill in the art towards an arrangement of engraving rollers, but fails to provide any suggestion for a roller having a hardened outer surface that is supported by an elastic surface. As such the prior art as a whole fails to disclose important aspects of the claimed combination.

Instead of being concerned with an arrangement of engraving rollers for embossing tissue articles, Kubo et al. discloses a sheet extrusion forming roller used in a sheet extrusion forming apparatus for forming a plastic sheet having at least one smooth surface. The sheet extrusion forming roller includes a shaft core 2, a rubber layer 3 that covers the shaft core 2 and a metal layer 4 that covers the rubber layer 3. The metal layer of Kubo et al. includes a seamless tubular product 4a containing nickel as a principle component and a coating film 4b

containing chromium as a principle component. However the metal layer of Kubo et al. is not a hard outer surface as claimed. The metal layer of Kubo et al. merely provides a resilient surface. Instead of directing the person of ordinary skill in the art towards a hard outer surface supported by an elastic surface, Kubo et al. directs the person of ordinary skill in the art towards a roller having a resilient outer surface for forming lens function sheets. Kubo et al. fails to address the problem of compressing paper webs to form a single continuous paper web without deforming or adversely altering the web. Kubo et al. merely directs the person of ordinary skill in the art towards solving the problem of maintaining resiliency of an outer surface of the roller. Kubo et al. discloses that if the thickness of the chromium coating film is less than 0.01 mm., the degree of resiliency may not be enough to prevent the tube from easily causing plastic deformation with the local stress. If the thickness exceeds 0.1 mm., the adherence force with the nickel tube decreases and exfoliation of the chromium coating film occurs. Thus, Kubo et al. discloses that a roller having a resilient surface is crucial, but fails to suggest a hard outer surface supported by an elastic surface as claimed. As such, the prior art as a whole fails to teach each feature of the present invention. Accordingly, Applicant respectfully requests that the Examiner favorably consider claims 1 and 9 and all claims that respectively depend thereon.

Claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt in view of Kubo et al. in further view of McNeil et al. (US 6,030,690). Although McNeil teaches a process for high pressure embossing a single ply of paper, the references as a whole fail to suggest the combination of features claimed. Specifically, Eisenschmidt and Kubo et al. provide no suggestion or teaching for the combination of a roller having a hard

outer surface supported by an elastic surface. As such, the references together do not teach or suggest the combination of features claimed. One of ordinary skill in the art is presented with various concepts, but these concepts do not provide any direction as to combining the features claimed. All claims define over the prior art as a whole.

Applicant has added new claims 11-20. New dependent claims 11-16 and 18-20 further clarify the features of the present invention. New independent claim 17 provides for features found in claim 1 but in different claim language. Claim 17 also highlights that a roller having a hardened outer surface compresses the paper webs against an impression roller to form a continuously joined paper web. Applicant respectfully requests that the Examiner favorably consider new claims 11-20.

Favorable consideration on the merits is requested.

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Attached: Petition for One Month Extension of Time

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